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ABSTRACT

Focusing on how to use a microcomputer as a terminal for searching online databases, this digest addresses the following topics: (1) hardware and software requirements; (2) configuring the software; and (3) basic requirements for specific microcomputers. Special features in communications software which allow microcomputer users to do database searching are described, such as print commands, save commands, access to command mode, format display, default setting, and status indicator. Suggestions for software configuration include telephone numbers for three major database vendors--DIALOG, BRS (Bibliographic Retrieval Services), and SDC (System Development Corporation). Finally, the hardware necessary to use a computer as a terminal is discussed, including interface modules, modems, modular jacks, acoustic couplers, and internal modems. A list of 10 different microcomputers and the hardware and software necessary to use them as terminals completes this digest. (JB)

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ERIC DIGEST

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ACCESSING ERIC WITH YOUR MICROCOMPUTER

This digest focuses on how to use your microcomputer as a terminal. It covers:

- Hardware and software requirements;
- Configuring the software; and
- Basic requirements for specific microcomputers.

What is needed to make a microcomputer act as a terminal?

Any ASCII coded (American Standard Code for Information Interchange) microcomputer can be used as a terminal when the following requirements are met:

- Software — communications or terminal emulator software
- Hardware —
  a) communications interface
  b) modem — to connect with telephone lines
- Telephone lines

Software—Communications or Terminal Emulator Software

A computer needs certain instructions to make it act as a terminal to communicate with another computer. It is possible to make your micro act as a dumb terminal using only a modem and the communications interface in most situations, but for database searching other features are desirable. The need for these special features depends on individual requirements. For example, unless you have some way of storing a search to disk or to a printer, you won't be able to reference the search later. Software differs for every computer and operating system. It is important that you experiment with the software on a system like your own or have some kind of return policy before purchasing.

Some special features in communications software that should be considered are listed below. These features are desirable for using your microcomputer as a terminal to do *database searching*. If you have other uses for a terminal (e.g., accessing a large mainframe computer), other features will be needed as well.

Print: This feature allows the screen display to be printed. Some software will allow you to print simultaneously, while in other cases it is necessary to save to disk and load the disk's contents to the printer later.

Save: This feature lets you save the screen display on a disk.

Access to Command Mode: It is desirable to be able to turn the printer on and off, change duplex settings, and access other system commands without breaking the connection with the vendor.

Format Display: Material being displayed on the screen will be formatted so that complete words will appear instead of having half the word at the end of one line and the rest of the word at the beginning of the next line.

Default Setting: To access different vendors, it is necessary to configure the software for that vendor. It is very useful to be able to pre-designate the configuration and then refer to that default setting (see Configuring the Software).

Status Indicator: Each software package provides certain options, e.g., printer on or off, write to disk, etc. It is helpful to be able to go to a menu that indicates what the status of these options is at any stage.

New communications software can be purchased with Hayes modems, while Racal Vadic provides the software with their modem. There are also two public domain communications programs for the IBM PC and compatibles called Q-Modem and PC Talk. They are available through microcomputer clubs or bulletin boards.

Configuring the Software

In order for a microcomputer to interface (access) the major vendors (BRS, DIALOG, or SDC), certain technical requirements, sometimes called telecommunications protocols, need to be set. This is called configuring the microcomputer and is part of the software. Baud rate, parity, duplex, and data length are examples of the settings that need to be made. The configuration settings vary for each vendor. Documentation from the vendors should include necessary information, or they can be contacted directly.

DIALOG: 1-800-3-DIALOG

BRS: 1-800-345-4277

SDC: 1-800-421-7229; 1-800-352-6689 (CA)

Depending on the kind of microcomputer you use as a terminal, which vendor you access, and which telephone network (Tymnet, Telenet, or Uninet) you use, certain commands need to be added to the protocol. For example, if you are using a printer during your search, certain commands are necessary to slow down transmission so that no data is lost. The vendors can give you this information.

Hardware

In order for data to be sent over a distance it is first necessary to convert from parallel transmission (i.e., sending 8 bits of data simultaneously) to serial transmission, which sends each bit one

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after the other or consecutively. This is accomplished by an EIA (Electronic Industries Association) RS-232C interface, the communications interface. Each computer manufacturer has a different way of referring to this interface (see the list below). It can be called a communications card, interface module, RS-232C interface or port, serial interface, or any combination of these. The RS-232C interface can also be combined with the other essential element in using your computer as a terminal, the modem.

Modem is an acronym for MOdulator/DEModulator. Because it is very expensive and inefficient to run direct lines from terminals to the large vendors, telephone lines are used to transmit the signals. To do this, serial transmissions need to be converted (or modulated) from digital to audio signals. At the other end, the audio signals have to be demodulated back into digital serial mode.

The speed at which data is being sent and received has to be the same. For this reason, some modems allow you to select the speed (either 300, 1200, or higher) that is being used (see Configuring the Software).

Lines from the RS-232C interface are connected to the modem, which is then hooked into the telephone line. This is done with either a modular jack or an acoustic coupler. A modular jack is the plug used to connect a regular telephone. If the plugs are compatible, the regular phone can be unplugged and the modem connected. An acoustic coupler is a modem that uses the handset on a telephone to connect with the phone lines. The modem has two cups that hold the receiver (handset) to allow transmission of audio signals. Usually a cable with adaptors is needed to make the connection between the RS-232C interface and the modem.

The communications interface and modem can also be combined onto a single board that fits into a slot inside the micro and connects directly with the telephone. This is called an internal modem.

The following is a list of some of the popular microcomputers and required components to access the vendors.

Microcomputer and Necessary Hardware/Software

APPLE II, II PLUS, IIe
- Telephone modem (Hayes Micromodem II suggested)
- Communications card (Serial or Superserial)
- Software available with Hayes modems

MACINTOSH/APPLE IIc
- Apple Personal Modem
- Built-in RS-232 port
- For MacIntosh—MacTerminal software
- For IIc—Apple Access

COMPAQ
- RS-232 interface
- Hayes modem
- Use public domain software or software available with modem

IBM PERSONAL COMPUTER
- Modem (Hayes Smartmodem suggested)
- RS-232 interface
- Use public domain software or software available with modem

LEADING EDGE
- Built-in RS-232 interface
- Hayes modem
- Use public domain software or software available with modem

TEXAS INSTRUMENTS 99/4, 99/4A
- Modem
- RS-232 interface
- Terminal EMULATOR II software cartridge

TRS-80 Model I
- Modem
- RS-232 interface board and expansion interface
- RS Term software or RS model 25-1172 modem and software

TRS-80 Model II
- Modem and RS-232 cable
- Software optional

TRS-80 Model III
- Modem
- RS-232 interface board
- RS Term software

Most CP/M-based microcomputers
- Modem
- RS-232 port

This digest was prepared by Jane A. Klausmeier, Operations Manager of the ERIC Clearinghouse on Information Resources. April 1986.

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